

[0020] In an example embodiment of the invention, the method further comprises:

[0021] calculating the distance estimation data based on a difference between the first angle of departure and second angle of departure.

[0022] In an example embodiment of the invention, an apparatus comprises:

[0023] at least one processor;

[0024] at least one memory including computer program code;

[0025] the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus at least to:

[0026] receive from a remote device, one or more wireless packets including information packets containing angle of departure information of the remote device;

[0027] determine a first angle of departure and a second angle of departure from the received angle of departure information; and

[0028] generate distance estimation data relative to the remote device, based on the determined first angle of departure and second angle of departure.

[0029] In an example embodiment of the invention, the apparatus further comprises:

[0030] the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus at least to:

[0031] determine the first angle of departure using a first antenna of the apparatus receiving the information packets and determine the second angle of departure using a second antenna of the apparatus receiving the information packets, the first antenna being spatially separate from the second antenna.

[0032] In an example embodiment of the invention, the apparatus further comprises:

[0033] the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus at least to:

[0034] determine the first angle of departure when the apparatus receives the information packets at a first location and determine the second angle of departure when the apparatus receives the information packets at a second location, the first location being spatially separate from the second location.

[0035] In an example embodiment of the invention, the apparatus further comprises:

[0036] the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus at least to:

[0037] determine the first angle of departure when the apparatus receives the information packets at a first location and determine the second angle of departure when the apparatus receives the information packets at a second location, the first location being spatially separate from the second location by a separation distance that is measured with an acceleration sensor.

[0038] In an example embodiment of the invention, the apparatus further comprises:

[0039] the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus at least to:

[0040] calculate the distance estimation data based on a difference between the first angle of departure and second angle of departure.

[0041] In an example embodiment of the invention, a computer program product comprising computer executable program code recorded on a computer readable non-transitory storage medium, the computer executable program code comprises:

[0042] code for receiving, by an apparatus from a remote device, one or more wireless packets including information packets containing angle of departure information of the remote device;

[0043] code for determining in the apparatus, a first angle of departure and a second angle of departure from the received angle of departure information; and

[0044] code for generating distance estimation data in the apparatus relative to the remote device, based on the determined first angle of departure and second angle of departure.

[0045] In an example embodiment of the invention, a method comprises:

[0046] receiving, by an apparatus from a remote device, one or more wireless packets including information packets containing angle of arrival information from the remote device;

[0047] determining in the apparatus, a first angle of arrival and a second angle of arrival from the received angle of arrival information; and

[0048] generating distance estimation data in the apparatus relative to the remote device, based on the determined first angle of arrival and second angle of arrival.

[0049] In an example embodiment of the invention, the method further comprises:

[0050] determining the first angle of arrival using a first antenna array of the apparatus receiving the information packets and determining the second angle of arrival using a second antenna array of the apparatus receiving the information packets, the first antenna array being spatially separate from the second antenna array.

[0051] In an example embodiment of the invention, the method further comprises:

[0052] determining the first angle of arrival when the apparatus receives the information packets in an antenna array of the apparatus when the apparatus is at a first location and determining the second angle of arrival when the apparatus receives the information packets in the antenna array when the apparatus is at a second location, the first location being spatially separate from the second location.

[0053] In an example embodiment of the invention, the method further comprises:

[0054] determining the first angle of arrival when the apparatus receives the information packets in an antenna array of the apparatus when the apparatus is at a first location and determining the second angle of arrival when the apparatus receives the information packets in the antenna array when the apparatus is at a second location, the first location being spatially separate from the second location, the first location being spatially separate from the second location by a separation distance that is measured with an acceleration sensor.

[0055] In an example embodiment of the invention, the method further comprises:

[0056] calculating the distance estimation data based on a difference between the first angle of arrival and second angle of arrival.